

REMARKS

In the final Office Action, the Examiner rejects claims 79-117 under 35 U.S.C. § 103(a) as allegedly being unpatentable over LIDDY et al. (U.S. Patent No. 6,026,388) in view of MCGREEVY (U.S. Patent No. 6,823,333). Applicants respectfully traverse this rejection.¹

By way of the present amendment, Applicants amend claims 79, 95, 96, 112, and 117 to improve form. No new matter has been added by way of the proposed amendment. Claims 79-117 are pending.

Independent claim 79 recites a method that is performed by a device. The method includes storing, in a memory of the device, search query-search document associations in a database, each search query-search document association representing a one-to-one pairing of an issued search query and a search document; receiving, by a processor of the device, a search query; identifying, by the processor, a set of search result documents using the received search query; and formulating, by the processor, a search query refinement suggestion based on at least one of the search result documents and at least one search query-search document association in the database. LIDDY et al. and MCGREEVY, whether taken alone or in any reasonable combination, do not disclose or suggest this combination of features.

To begin, Applicants strenuously object to the Examiner's piecemeal examination. It is wholly unreasonable for the Examiner to dissect a claim feature into a few words at a

¹ As Applicants' remarks with respect to the Examiner's rejections overcome the rejections, Applicants' silence as to certain assertions by the Examiner in the Office Action or certain requirements that may be applicable to such rejections (e.g., whether a reference constitutes prior art, reasons for modifying a reference and/or combining references, assertions as to dependent claims, etc.) is not a concession by Applicants that such assertions are accurate or that such requirements have been met, and Applicants reserve the right to dispute these assertions/requirements in the future.

time and cite to different references for allegedly disclosing these words. Thus, the Examiner's rejection is improper.

Nevertheless, LIDDY et al. and MCGREEVY do not disclose or suggest formulating, by a processor, a search query refinement suggestion based on at least one of the search result documents and at least one search query-search document association in a database relating to the at least one search result document, where each search query-search document association represents a one-to-one pairing of an issued search query and a search document. The Examiner relies on column 3, lines 1-14; column 7, lines 14-51; column 8, lines 13-40, and column 9, lines 19-33 of LIDDY et al. and column 18, lines 58-67; column 29, lines 9-21; column 29, line 64 – column 30, line 3; and column 51, lines 51-67 of MCGREEVY as allegedly disclosing this feature (final Office Action, pg. 3). Applicants respectfully disagree with the Examiner's interpretation of LIDDY et al. and MCGREEVY.

At column 3, lines 1-14, LIDDY et al. discloses:

According to a further aspect of the invention, a set of documents is presented to the user, who is given an opportunity to select some or all of the documents, typically on the basis of such documents being of particular relevance. The user then initiates the generation of a query representation based on the alternative representations of the selected document(s). To the extent that the set of documents were retrieved in response to a previous query, the alternative representations of the selected documents may be combined with the alternative representation of the previous query. Thus the user is able to improve on an initial query representation by re-expressing the query as a composite of the representations derived from documents deemed highly relevant by the user, possibly combined with the representation of the original query.

This section of LIDDY et al. discloses re-expressing a query as a composite of representations derived from documents deemed relevant by the user, possibly combined with the representation of the original query. While this section of LIDDY et al. discloses formulating re-expressing a query based on search result documents, this

section of LIDDY et al. does not disclose or suggest formulating a search query refinement suggestion based on a search query–search document association in a database. In other words, LIDDY et al. does not disclose that the search result documents are stored in a one-to-one association with an issued search query. Therefore, this section of LIDDY et al. does not disclose or suggest formulating, by a processor, a search query refinement suggestion based on at least one of the search result documents and at least one search query–search document association in a database relating to the at least one search result document, where each search query–search document association represents a one-to-one pairing of an issued search query and a search document, as recited in claim 79. In fact, this section of LIDDY et al. does not even mention a search query – search document association that represents a one-to-one pairing of an issued search query and a search document.

At column 7, lines 14-51, LIDDY et al. discloses software designed to process text stored in documents or entered as queries to create a database file and to match documents to the requirements of a user's query text. This section of LIDDY et al. further discloses that by the time a user is entering queries into the system, the relevant document database will have been processed and annotated and various data files and data constructs will have been established. This section of LIDDY et al. discloses generating an alternative representation for a query by matching documents and queries at the lexical, syntactic, semantic, and discourse levels. This section of LIDDY et al. does not disclose or suggest formulating, by a processor, a search query refinement suggestion based on at least one of the search result documents and at least one search query–search document association in a database relating to the at least one search result

document, where each search query-search document association represents a one-to-one pairing of an issued search query and a search document, as recited in claim 79. In fact, this section of LIDDY et al. does not even mention a search query – search document association that represents a one-to-one pairing of an issued search query and a search document.

At column 8, lines 13-40, LIDDY et al. discloses generating an alternative representation of a query. LIDDY et al. does not disclose that this alternative representation is generated based on at least one of the search result documents and at least one search query – search document association in a database relating to the at least one search result. Thus, LIDDY et al. does not disclose or suggest formulating, by a processor, a search query refinement suggestion based on at least one of the search result documents and at least one search query-search document association in a database relating to the at least one search result document, where each search query-search document association represents a one-to-one pairing of an issued search query and a search document, as recited in claim 79. In fact, this section of LIDDY et al. does not even mention a search query – search document association that represents a one-to-one pairing of an issued search query and a search document.

At column 9, lines 19-33, LIDDY et al. discloses:

Document preprocessor 80 transforms raw digital data files of text into a uniform format suitable for further processing by the DR-LINK system. Preprocessing involves some discourse-level manipulation of text, such as the explicit decomposition of composite documents into appropriate sub-texts. All text is annotated with pseudo-SGML tags. Preprocessing tags include, but are not limited to, fields such as <caption>, <date>, <headline>, <sub-text headline>, and <sub-text>, <Fig.> and <table>. The preprocessor further identifies various fields, clauses, parts-of-speech and punctuation in a text, and annotates a document with identifying tags for these units. The identification process occurs at the sentence, paragraph and discourse levels and is a fundamental precursor to later natural language processing and document-query matching.

This section of LIDDY et al. discloses transforming raw digital data files of text into a uniform format by decomposing documents into sub-texts and identifying various fields, clauses, parts-of-speech and punctuation in a text, and annotating a document with tags for these units. Transforming raw digital data files of text is in no way equivalent to formulating a search query refinement suggestion. Therefore, this section of LIDDY et al. does not disclose or suggest formulating, by a processor, a search query refinement suggestion based on at least one of the search result documents and at least one search query-search document association in a database relating to the at least one search result document, where each search query-search document association represents a one-to-one pairing of an issued search query and a search document, as recited in claim 79. In fact, this section of LIDDY et al. does not even mention a search query – search document association that represents a one-to-one pairing of an issued search query and a search document.

At column 18, lines 58-67, MCGREEVY discloses:

Expanding the query is also referred to as creating a gleaning model of the query. FIG. 8 illustrates one embodiment of expanding the query 800 and includes a process of first comparing the query to each one of the models of the subsets of the database in block 802. The matching relations are extracted from the models of the subsets of the database. Each one of the matching relations has a term pair, including a term that matches at least one term in the query, and a related term, in block 804. The matching relation also includes a number of relational summation metrics.

This section of MCGREEVY discloses expanding a query by extracting matching relations, including a term that matches at least one term in a query and a related term, from a database. This section of MCGREEVY discloses extracting related terms from a database, not formulating, by a processor, a search query refinement suggestion based on at least one of the search result documents and at least one search query-search document

association in a database relating to the at least one search result document, where each search query-search document association represents a one-to-one pairing of an issued search query and a search document, as recited in claim 79.

At column 29, lines 9-21, MCGREEVY discloses:

Most keyword search methods use term indexing such as used by Salton, 1981, where a word list represents each document and internal query. As a consequence, given a keyword as a user query, these methods use the presence of the keyword in documents as the main criterion of relevance. In contrast, keyterm search described herein uses indexing by term association, where a list of contextually associated term pairs represents each document and internal query. Given a keyterm as a user query, keyterm search uses not only the presence of the keyterm in the database being searched but also the contexts of the keyterm as the criteria of relevance. This allows retrieved documents to be sorted on their relevance to the keyterm in context.

This section of MCGREEVY discloses that, given a keyterm as a user query, keyterm search uses not only the presence of the keyterm in the database being searched but also the contexts of the keyterm as the criteria of relevance. This section of MCGREEVY discloses expanding a query keyterm based on contexts of the keyterm. This section of MCGREEVY does not disclose or suggest formulating a search query refinement suggestion based on at least one of the search result documents and at least one search query-search document association in a database relating to the at least one search result document, where each search query-search document association represents a one-to-one pairing of an issued search query and a search document, as recited in claim 79.

At column 29, line 64 – column 30, line 3, MCGREEVY discloses:

A phrase search query includes one or more query fields, and each query field can contain a sequence of terms. When applied to text, each phrase search query field can include a sequence of words such as two or more words, a phrase, a sentence, a paragraph, a document, or a collection of documents. In the following description, the word "phrase" is intended to be representative of any sequence of terms.

This section of MCGREEVY discloses that, when applied to text, each phrase search query field can include a sequence of words such as two or more words, a phrase, a sentence, a paragraph, a document, or a collection of documents. This section of MCGREEVY does not mention formulating a search query refinement suggestion or a search query-search document association. Therefore, this section of MCGREEVY cannot disclose or suggest formulating, by a processor, a search query refinement suggestion based on at least one of the search result documents and at least one search query-search document association in a database relating to the at least one search result document, where each search query-search document association represents a one-to-one pairing of an issued search query and a search document, as recited in claim 79.

At column 51, lines 51-67, MCGREEVY discloses:

Phrase generation is one of several methods that display phrases contained in collections of text as a way to assist a user in domain analysis or query formulation and refinement. Phrase generation, described herein, includes an implicit phrase representation that can provide all possible phrases from the database. In contrast, other methods such as Godby (1994), Gutwin, Paynter, Witten, Nevill-Manning, and Frank (1998), Normore, Bendig, and Godby (1999), Zamir and Etzioni (1999), and Jones and Staveley (1999), maintain explicit and incomplete lists of phrases. In addition, phrase generation can provide the essence of multiple, similar phrases, which can be used as queries in a phrase search. The option of using the flexible matching of phrase search allows the generated query phrases to match both identical and nearly identical phrases in the text. This ensures that inconsequential differences do not spoil the match.

This section of MCGREEVY discloses that phrase generation can provide the essence of multiple, similar phrases, which can be used for query formulation and refinement. While this section of MCGREEVY discloses using phrase generation for query formulation and refinement, this section of MCGREEVY does not mention that this query formulation and refinement is based on at least one search result document and at least one search query-search document association in a database. Therefore, this section

of MCGREEVY cannot disclose or suggest formulating, by a processor, a search query refinement suggestion based on at least one of the search result documents and at least one search query-search document association in a database relating to the at least one search result document, where each search query-search document association represents a one-to-one pairing of an issued search query and a search document, as recited in claim 79.

In addition, even if, for the sake of argument, the combination could be fairly construed to disclose or suggest each of these features of claim 79, Applicants assert that the alleged reason for combining these references does not meet the requirements of 35 U.S.C. § 103.

For example, on pages 3-4 of the final Office Action, the Examiner alleges that “[i]t would have been obvious...to modify the teachings of Liddy with the teachings of McGreevy to utilize the key term pairings and the search term refinements in a database search system to enhance the method to identify the most relevant subset of outputs.” Applicants submit that the Examiner's reason is a conclusory statement and is impermissibly gleaned from Appellant's own disclosure. Such reasons are insufficient for establishing a *prima facie* case of obviousness.

For at least the foregoing reasons, Applicants submit that claim 79 is patentable over LIDDY et al. and MCGREEVY, whether taken alone or in any reasonable combination.

Claims 80-93 depend from claim 79. Therefore, these claims are patentable over LIDDY et al. and MCGREEVY, whether taken alone or in any reasonable combination, for at least the reasons given above with respect to claim 79.

Independent claims 94-96 and 111 recite features similar to, yet possibly of different scope than, features recited above with respect to claim 79. Therefore, claims 94-96 and 111 are patentable over LIDDY et al. and MCGREEVY, whether taken alone or in any reasonable combination, for at least reasons similar to the reasons given above with respect to claim 79.

Claims 97-110 depend from claim 96. Therefore, these claims are patentable over LIDDY et al. and MCGREEVY, whether taken alone or in any reasonable combination, for at least the reasons given above with respect to claim 96.

Independent claim 112 recites a method that is performed by a device. The method includes creating, by a processor of the device, a query source reference, including: identifying, by the processor, associations between issued search queries and retrieved search documents in a one-to-one relation, and assigning, by the processor, a weight to each of the associations; receiving, by the processor, a search query; and formulating, by the processor, a refinement suggestion for the received search query using the query source reference. LIDDY et al. and MCGREEVY, whether taken alone or in any reasonable combination, do not disclose or suggest this combination of features.

For example, LIDDY et al. and MCGREEVY do not disclose or suggest formulating, by a processor, a refinement suggestion for a received search query using a created query source reference, where creating the query source reference includes identifying associations between issued search queries and retrieved search documents in a one-to-one relation, and assigning a weight to each of the associations. The Examiner relies on column 3, lines 1-14; column 7, lines 14-51; column 8, lines 13-40; column 12, lines 1-20; and column 20, line 48 – column 21, line 12 of LIDDY et al. and column 18,

lines 58-67; column 29, lines 9-21; column 29, line 64 – column 30, line 3; and column 51, lines 51-67 of MCGREEVY at allegedly disclosing this feature (Office Action, pp. 9-10). Applicants respectfully disagree with the Examiner's interpretation of LIDDY et al. and MCGREEVY.

As noted above, at column 3, lines 1-14, LIDDY et al. discloses re-expressing a query as a composite of representations derived from documents deemed relevant by the user, possibly combined with the representation of the original query. This section of LIDDY et al. discloses re-expressing a query based on composite representations of relevant documents, not based on a created source reference, where creating the source reference includes identifying associations between issued search queries and retrieved search documents in a one-to-one relation, and assigning a weight to each of the associations. This section of LIDDY et al. does not disclose or suggest formulating, by a processor, a refinement suggestion for a received search query using a created query source reference, where the creating includes identifying associations between issued search queries and retrieved search documents in a one-to-one relation, and assigning a weight to each of the associations, as recited in claim 112.

As noted above, at column 7, lines 14-51, LIDDY et al. discloses software designed to process text stored in documents or entered as queries to create a database file and to match documents to the requirements of a user's query text. This section of LIDDY et al. further discloses that by the time a user is entering queries into the system, the relevant document database will have been processed and annotated and various data files and data constructs will have been established. This section of LIDDY et al. discloses generating an alternative representation for a query by matching documents and

queries at the lexical, syntactic, semantic, and discourse levels, not based on a created source reference, where creating the source reference includes identifying associations between issued search queries and retrieved search documents in a one-to-one relation, and assigning a weight to each of the associations. Thus, this section of LIDDY et al. does not disclose or suggest formulating, by a processor, a refinement suggestion for a received search query using a created query source reference, where creating the query source reference includes identifying associations between issued search queries and retrieved search documents in a one-to-one relation, and assigning a weight to each of the associations, as recited in claim 112.

As noted above, at column 8, lines 13-40, LIDDY et al. discloses generating an alternative representation of a query. LIDDY et al. does not disclose that this alternative representation of a query is generated based on a created source reference, where creating the source reference includes identifying associations between issued search queries and retrieved search documents in a one-to-one relation, and assigning a weight to each of the associations. Thus, this section of LIDDY et al. does not disclose or suggest formulating, by a processor, a refinement suggestion for a received search query using a created query source reference, where creating the source query reference includes identifying associations between issued search queries and retrieved search documents in a one-to-one relation, and assigning a weight to each of the associations, as recited in claim 112.

At column 12, lines 1-20, LIDDY et al. discloses:

2.6 Complex Nominal (CN) Detector 120

Complex nominals (e.g., budget amendment bill, central nervous system) are important information-bearing phrases detected by the DR-LINK system and used in the document-query matching process. CN phrases are recognizable as adjacent noun pairs or sequences of non-predicating and predicating adjective(s) and noun(s). These pairs or sequences can be recognized from the output of the

POS-tagged text in conjunction with various unique processing tools developed from corpus analysis. In addition, CN phrases are recombined, or parsed, whereby meaningful complex nominal word combinations are extracted and indexed. For example, the CN "Information Retrieval System" would be recombined to yield "Information Retrieval," "Retrieval System," and "Information System." A synonymous phrase might be "Text Processing Software." Later matching algorithms weight these terms based on the assumption that a whole CN is a better, more specific indicator of the document's contents than the recombined constituent words.

This section of LIDDY et al. discloses weighting terms based on an assumption that a whole complex nominal is a better, more specific indicator of the document's contents than the recombined constituent words. While this section of LIDDY et al. mentions the term "weight," this section of LIDDY et al. does not disclose or suggest formulating, by a processor, a refinement suggestion for a received search query using a created query source reference, where creating the query source reference includes identifying associations between issued search queries and retrieved search documents in a one-to-one relation, and assigning a weight to each of the associations, as recited in claim 112.

At column 20, line 48 – column 21, line 12, LIDDY et al. discloses that, as an alternate embodiment to the keyterm search, multiple queries can be applied to the keyterm search processes. This section of LIDDY et al. does not disclose or suggest formulating, by a processor, a refinement suggestion for a received search query, let alone formulating a refinement suggestion for a received search query using a created query source reference, where creating the query source reference includes identifying associations between issued search queries and retrieved search documents in a one-to-one relation, and assigning a weight to each of the associations, as recited in claim 112.

As noted above, at column 18, lines 58-67, MCGREEVY discloses expanding a query by extracting matching relations, including a term that matches at least one term in a query and a related term, from a database. While this section of MCGREEVY

discloses expanding a query MCGREEVY does not disclose or suggest formulating, by a processor, a refinement suggestion for a received search query using a created query source reference, where creating the query source reference includes identifying associations between issued search queries and retrieved search documents in a one-to-one relation, and assigning a weight to each of the associations, as recited in claim 112.

As noted above, at column 29, lines 9-21, MCGREEVY discloses that, given a keyterm as a user query, keyterm search uses not only the presence of the keyterm in the database being searched but also the contexts of the keyterm as the criteria of relevance. This section of MCGREEVY discloses expanding a query keyterm based on contexts of the keyterm. This section of MCGREEVY does not disclose or suggest formulating, by a processor, a refinement suggestion for a received search query using a created query source reference, where creating the query source reference includes identifying associations between issued search queries and retrieved search documents in a one-to-one relation, and assigning a weight to each of the associations, as recited in claim 112.

As noted above, at column 29, line 64 – column 30, line 3, MCGREEVY discloses that, when applied to text, each phrase search query field can include a sequence of words such as two or more words, a phrase, a sentence, a paragraph, a document, or a collection of documents. This section of MCGREEVY does not disclose or suggest formulating, by a processor, a refinement suggestion for a received search query, let alone formulating a refinement suggestion for a received search query using a created query source reference, where the creating includes identifying associations between issued search queries and retrieved search documents in a one-to-one relation, and assigning a weight to each of the associations, as recited in claim 112.

As noted above, at column 51, lines 51-67, MCGREEVY discloses that phrase generation can provide the essence of multiple, similar phrases, which can be used for query formulation and refinement. While this section of MCGREEVY discloses using phrase generation for query formulation and refinement, this section of MCGREEVY does not disclose or suggest formulating, by a processor, a refinement suggestion for a received search query using a created query source reference, where creating the query source reference includes identifying associations between issued search queries and retrieved search documents in a one-to-one relation, and assigning a weight to each of the associations, as recited in claim 112.

In addition, even if, for the sake of argument, the combination could be fairly construed to disclose or suggest each of these features of claim 112, Applicants assert that the alleged reason for combining these references does not meet the requirements of 35 U.S.C. § 103.

For example, on page 10 of the final Office Action, the Examiner alleges that “[i]t would have been obvious...to modify the teachings of Liddy with the teachings of McGreevy to utilize the key term pairings and the search term refinements in a database search system to enhance the method to identify the most relevant subset of outputs.” Applicants submit that the Examiner's reason is a conclusory statement and is impermissibly gleaned from Appellant's own disclosure. Such reasons are insufficient for establishing a *prima facie* case of obviousness.

For at least the foregoing reasons, Applicants submit that claim 112 is patentable over LIDDY et al. and MCGREEVY, whether taken alone or in any reasonable combination.

Claims 113-115 depend from claim 112. Therefore, these claims are patentable over LIDDY et al. and MCGREEVY, whether taken alone or in any reasonable combination, for at least the reasons given above with respect to claim 112.

Independent claims 116 and 117 recite features similar to, yet possibly of different scope than, features recited above with respect to claim 112. Therefore, claims 116 and 117 are patentable over LIDDY et al. and MCGREEVY, whether taken alone or in any reasonable combination, for at least reasons similar to the reasons given above with respect to claim 112.

Conclusion

In view of the foregoing amendments and remarks, Applicants respectfully request the Examiner's reconsideration of this application, and the timely allowance of the pending claims.

To the extent necessary, a petition for an extension of time under 37 C.F.R. § 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account No. 50-1070 and please credit any excess fees to such deposit account.

Respectfully submitted,

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